REMARKS

Claims 1-10, 12-28 and 42-45 remain in this application. Claims 29-41 have been previously cancelled. Claims 1-10, 12-28 and 42 have been amended. Claim 11 is cancelled.

Applicants thank the Examiner for the detailed study of the application and prior art. The present claimed invention is directed to an improved multimode wavelength division multiplexed (WDM) network transceiver system that is operative in time division multiplexing networks, such as an Ethernet infrastructure. The network transceiver system expands the bandwidth of an optical fiber-based time division multiplexed network infrastructure of the type that is becoming more common today. At the present time, larger files are being transferred and more complicated programs run on servers and workstations. Typically, trying to increase the data rate transmission in multimode fiber has been limited by modal dispersion. Some multimode fiber designs have been used to combat modal dispersion degradation, but they have been found expensive.

The present invention expands the bandwidth of these types of existing optical communications network. The network transceiver system is more than a simplified optical wavelength division multiplexer that couples data sources and sinks with two data sources in which different channels can be used.

Applicants note the rejection of claims 1-2, 5, 7, 10-12, 17, 21, 23, 25-27, 42-43 and 45 as obvious over U.S. Patent No. 5,825,949 to Choy et al. (hereinafter "Choy"), in view of U.S. Patent No. 6,512,614 to Saleh.

This Amendment clarifies the present claimed invention. The claims now distinguish between the network transceiver system, such as 20 and 20a, and the optical single channel transceivers, such as 56 in FIGS. 3A and 3B. Claim 1 recites a plurality of optical single channel transceivers, each operative at a first wavelength band and receiving optical communications signals. A plurality of optical transmitters are operatively connected and matched to respective single channel transceivers and receive signals electrically processed at each respective single channel transceiver at the first wavelength band and transmit optical communications signals along respective signal paths at a second wavelength band. A wavelength division multiplexer is operatively connected to each optical transmitter for receiving the optical communications signals at the second wavelength band and wavelength division multiplexing the optical communications signals within the second wavelength band into a multimode wavelength division multiplexed optical communications signal. This signal can have a wavelength channel spacing less than about 1,000 GHz.

On the receive side of this network transceiver system, a demultiplexer receives a multimode wavelength division multiplexed optical communications signal within the second wavelength band from another multimode wavelength division multiplexed (WDM) network transceiver system and demultiplexes this signal into a plurality of demultiplexed optical communications signals. A plurality of optical receivers are each connected to the demultiplexer and matched with a respective single channel transceiver, which of course, are also connected and matched to optical transmitters. The

optical receivers receive and detect demultiplexed optical communications signals and pass a signal to a respective single channel transceiver as an optical communications signal at the first wavelength band, which is then processed.

It is thus clear that the present claimed invention includes different channels, and as shown clearly in FIG. 3A, a single channel transceiver is operative at one or a first wavelength band of 850 nm, while the WDM integrated transmitter could be operative at 1535.04 nm, two wavelength bands in one channel.

This is opposite from what Choy teaches in which each input/output card (IOC) and laser/receiver card (LRC) form a channel at a single wavelength. Applicants note that each channel may have a different wavelength, but a wavelength is constant per channel. For example, column 4, starting at line 43 discusses a large variety of serial data stream types that can be used in any combination within the WDM, that is, "each channel is independent of every other channel and provides a capability to perform full duplex communications, utilizing as a minimum the single fiber length 28, between the WDM's 12a and a remotely located WDM 12b" (column 4, starting at line 67 through column 5, line 4) (emphasis added). Each WDM 12a and 12b could be configured such that corresponding channels use the same type of I/O specific components 30, 32, 34.

It is thus evident that each channel formed by the specific components may have a different wavelength between the channels, but the components in the channel are at the one wavelength. This is opposite from the present claimed invention.

As to Saleh, it may teach the use of more packed wavelengths in passive parts of a network, for example, multiplexers operating at a spacing close to 1,000 GHz without interfering with other wavelengths. Applicants note that Saleh is directed to access ring architectures and an improved access node with an improved communications protocol. There is no teaching, however, of the present claimed invention, and more particularly, of a network transceiver of the present claimed invention.

Although Wilshire may show the use of InGaAS PIN detectors, Wilshire is directed to testing integrated circuits and the optical interferometric probing of integrated circuit electrical activity. In Wilshire, a repetitive electrical test pattern signal is applied to devices. It nowhere suggests using an optical receiver as an InGaAS PIN detector, as in the present claimed invention.

Muoi is particularly directed to an optical receiver with an improved dynamic range and an optical detector serially connected to a transimpedance amplifier that supplies a fixed amount of gain along with the current-to-voltage conversion. Muoi improves the dynamic range for an optical receiver, but does not suggest the use of a transimpedance amplifier as in the present claimed invention.

Clark is directed to multiplexing or demultiplexing multiple laser beams of different wavelengths to increase efficiency of laser communication and make filtering technology more efficient in wavelength multiplexing. Clark nowhere suggests that the optical transmitter of the present invention could be a thermal electric cooler and controller circuit. Clark suggests that the difference between the

sampled voltage and a reference can be used as an error signal to adjust current through a thermoelectric cooler to control the temperature of a diode laser.

Taga discloses a wavelength division multiplexed (WDM) optical communication method and apparatus that uses pre-emphasis to adjust attenuation or amplification of an optical channel at a transmitter terminal to produce identical signal-to-noise ratios for all optical channels at a receiver terminal. These pre-emphasis adjustments are made on the basis of signal-to-noise ratio measurements performed at the receiver terminal. The attenuator in Taga is used with a pre-emphasis circuit and does not suggest that an attenuator can be positioned within a transmit signal channel between each optical transmitter and a multiplexer.

U.S. published patent application no. 2002/0077995 to Allison is directed to pattern matching in a communications network. Different stations in this network can be awakened by matching a pattern received from the network with patterns and stations. When a match occurs, the stations are awakened. FIG. 1 shows an Ethernet physical layer chip 14 that can interface different media. This is a standard interface, but nowhere suggests the present claimed invention.

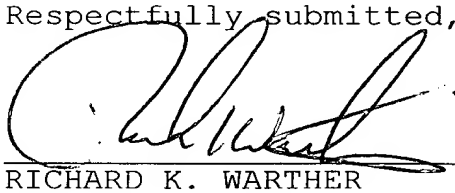
As to U.S. Patent No. 6,690,668 to Szczepanek et al. (hereinafter "Szczepanek"), it discloses a simple modular interconnection of network switches in which RJ45 jacks can be used. Nowhere does Szczepanek disclose or suggest the present claimed invention or the different features.

It is clear that none of the cited prior art, either singularly or in combination with each other, suggests the present claimed invention of a multimode wavelength division

multiplexed (WDM) network transceiver system having a plurality of single channel transceivers, each operative at a first wavelength band and each single channel transceiver operatively connected and matched to a respective optical transmitter and optical receiver, which are each operative at a second wavelength band, each operatively connected to a multiplexer or respective demultiplexer, as the case may be. This one WDM network transceiver system would be in communication with another WDM network transceiver system of similar design as set forth and explained above. None of the prior art, either singularly or in combination, suggests the claimed features and functions of the present invention.

Applicants contend that the present case is in condition for allowance and respectfully requests that the Examiner issue a Notice of Allowance and Issue Fee Due. If the Examiner has any questions or suggestions for placing this case in condition for allowance, the undersigned attorney would appreciate a telephone call.

Respectfully submitted,



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